

IAP20 Rcs'd PGT/PTO 02 FEB 2006

CLAIMS

1. A digital recording apparatus comprising:
 - a data control circuit which receives a digital recording signal;
 - a memory which is capable of communicating information with the data control circuit;
 - an encryption circuit which is capable of communicating information with the data control circuit, the encryption circuit encrypting the digital recording signal;
 - a recording unit which is controlled by the data control circuit, the recording unit recording the digital recording signal on a recording medium; and
 - a recording signal processing circuit which causes the data control circuit to control transmission of the digital recording signal;wherein when the digital recording signal needs to be encrypted, the encryption circuit begins to start up and the digital recording signal is transmitted from the data control circuit to the memory to be stored in the memory during start-up of the encryption circuit, and when the encryption circuit becomes capable of operation, the digital recording signal stored in the memory is transmitted via the data control circuit to the encryption circuit and is encrypted by the encryption circuit to be recorded in the recording unit.
2. A digital reproducing apparatus comprising:
 - a reproducing unit which reproduces a digital recording signal from a recording medium;
 - a data control circuit which controls the reproducing unit and outputs a reproduced digital recording signal;

the memory which is capable of communicating information with the data control circuit;

a decryption circuit which is capable of communicating information with the data control circuit, the decryption circuit decrypting the digital recording signal; and

a recording signal processing circuit which causes the data control circuit to control transmission of the digital recording signal;

wherein when the digital recording signal encrypted and recorded on the recording medium needs to be decrypted and reproduced, during start-up of the decryption circuit, the digital recording signal having been stored before start-up of the decryption circuit is outputted via the data control circuit, and when the decryption circuit is capable of operation, the digital recording signal read by the reproducing unit is transmitted via the data control circuit to the decryption circuit and is decrypted by the decryption circuit to be outputted.

3. A digital recording/reproducing apparatus comprising:

the digital recording apparatus of claim 1; and
the digital reproducing apparatus of claim 2.

4. An encryption apparatus comprising:

a storage unit which stores a digital signal;
an encryption unit which encrypts the digital signal;

an encryption key generation unit which generates an encryption key for enabling the encryption unit;

a determination unit which determines whether or not the digital signal needs to be encrypted by the

encryption unit; and

a control unit which controls the storage unit and the encryption unit in such a way that when the determination unit determines that the digital signal does not need to be encrypted, the digital signal is not encrypted by the encryption unit and the digital signal stored in the storage unit is outputted, and when the determination unit determines that the digital signal needs to be encrypted, the digital signal from a time of the determination to a time when the enabling of the encryption unit is completed by the encryption key is stored in the storage unit and is encrypted by the encryption circuit to be outputted after the enabling of the encryption unit is completed.

5. The encryption apparatus according to claim 4, wherein the encryption key is generated from information read from a recording medium for recording the digital signal.

6. The encryption apparatus according to claim 4 or 5, wherein when the determination unit determines that the digital signal needs to be encrypted, the storage unit secures a vacant capacity larger than a capacity capable of storing the digital signal from a time of the determination to a time when the enabling of the encryption unit is completed by the encryption key.

7. A decryption apparatus comprising:
a storage unit which stores a digital signal;
a decryption unit which decrypts an encrypted signal of the digital signal;
an encryption key generation unit which generates an encryption key for enabling the decryption unit;

a determination unit which determines whether or not the digital signal needs to be decrypted by the decryption unit; and

a control unit which controls the storage unit and the decryption unit in such a way that when the determination unit determines that the digital signal does not need to be decrypted, the digital signal is not decrypted by the decryption unit and the digital signal stored in the storage unit is outputted, and when the determination unit determines that the digital signal needs to be decrypted, the digital signal from a time of the determination to a time when the enabling of the decryption unit is completed by the encryption key is stored in the storage unit and is decrypted by the decryption circuit to be outputted after the enabling of the decryption unit is completed.

8. The decryption apparatus according to claim 7, wherein the encryption key is generated from information read from a recording medium for recording the digital signal.

9. The decryption apparatus according to claim 7 or 8, wherein when the determination unit determines that the digital signal needs to be decrypted, the amount of data of the digital signal stored in the storage unit is not less than an amount of data outputted from a time of the determination to a time when the enabling of the decryption unit is completed by the encryption key.

10. An encryption method comprising the steps of:
storing a digital signal;
encrypting the digital signal;
generating an encryption key for enabling a

function of encrypting the digital signal; and

determining whether or not the digital signal needs to be encrypted;

wherein when the determination is that the digital signal does not need to be encrypted, the digital signal is not encrypted and the stored digital signal is outputted, and when the determination is that the digital signal needs to be encrypted, the digital signal from a time of the determination to a time when the function of encrypting is enabled is stored and is encrypted to be outputted after the enabling of the function of encrypting is completed.

11. A decryption method comprising the steps of:

storing a digital signal;

decrypting an encrypted digital signal of the digital signal;

generating an encryption key for enabling a function of decrypting the digital signal; and

determining whether or not the digital signal needs to be decrypted;

wherein when the determination is that the digital signal does not need to be decrypted, the digital signal is not decrypted and the stored digital signal is outputted, and when the determination is that the digital signal needs to be decrypted, the digital signal from a time of the determination to a time when the function of decrypting is enabled is stored and is decrypted to be outputted after the enabling of the function of decrypting is completed.